

vending machines from its Burger Kings and banned smoking in the restaurants' kitchens.

The Jan franchise operates in Vermont, Massachusetts and Connecticut. The 700 U.S. restaurants company-owned by Burger King Corp provide designated smoking areas. See *The Associated Press*, August 31, 1993, and *PR Newswire*, August 30, 1993.

**[30] Smoking Ban for Staff at Illinois Centers for Disabled**

As of October 1, 1993, the approximately 2,700 employees of Illinois' three state centers for the developmentally disabled will be prohibited from smoking. The ban will not apply to the 1,450 residents of the centers. The centers are operated by the U.S. Department of Health and Social Services. According to a spokesperson, residents are exempted from the ban because cigarettes are incorporated into training programs as rewards to encourage desirable behavior in some residents who smoke. See *The Chicago Tribune*, August 31, 1993.

**[31] Consumer Group Terms Secondhand Tobacco Smoke a "Hidden Hazard"**

On September 1, 1993, the Coalition for Consumer Health and Safety reportedly released a pamphlet which includes environmental tobacco smoke as one of 10 alleged hidden hazards. No attempt was made to rank each item. In addition to ETS, other alleged hazards cited by the group include alcohol and babywalkers.

The coalition is made up of national consumer, health and insurer groups involved in public education and influencing federal policy. The public is invited to write for a free copy of the pamphlet. See *The Associated Press*, September 2, 1993.

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**MEDIA COVERAGE**

**[32] "Rental Providers Seek to Limit Smoking Through Incentives," *Star Tribune*, August 21, 1993**

Warner Properties, which reportedly has given monthly rental discounts to nonsmokers since 1978, claims cost and time savings when the units occupied by nonsmokers are prepared for the next tenant. According to the

Minnesota Multi Housing Association, "[s]uch cost reductions have prompted a growing number of Twin Cities property owners and managers to limit smoking in their buildings through similar incentives." Nevertheless, Warner reports that when nonsmoking tenants were asked, they said they were not interested in eliminating smoking from their buildings, preferring instead to allow their guests the choice of whether to smoke.

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**SCIENTIFIC/TECHNICAL ITEMS**

**UPCOMING MEETINGS**

**[33] "Ventilation and Indoor Air Quality Workshop," Research Triangle Park, Raleigh, North Carolina, September 14-16, 1993**

This upcoming workshop is coordinated by the U.S. EPA's Air and Energy Engineering Research Laboratory and the University of Illinois' Bioenvironmental Engineering Research Laboratory. According to a letter sent to workshop participants, the purpose of the workshop is to: "1) define the state of the art in ventilation technology and its impact on IAQ, 2) assess emerging trends in ventilation systems, and 3) identify and prioritize related research needs." The letter also states that conference participants "[c]ollectively . . . will write the consensus report during the meeting that will guide the research, policy and educational activities for the Environmental Protection Agency and cooperating agencies, institutions and industry."

Among the more than 70 persons listed as participants is John Girman of EPA's Indoor Air Division.

**[34] "The National Environmental Tobacco Smoke Conference: Public Battles, Private Choices," The Hyatt Regency on Capitol Hill, Washington, D.C., December 16-17, 1993**

According to promotional materials, this conference plans to bring together professionals from law, government, occupational safety and health, building management, and public interests who are spearheading the "national response" to ETS. Representatives will discuss "the legislative, policy, and legal issues critical to the appropriate management of environmental tobacco smoke." The conference is sponsored by IAQ Publications, Inc., publishers of *Indoor Air Review*, a

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monthly publication and host of several annual conferences on indoor environmental issues.

## LUNG CANCER

- [35] Editorial Regarding "Involuntary Smoking in the Restaurant Workplace: A Review of Employee Exposure and Health Effects," M. Siegel, *Journal of the American Medical Association* 270(4): 490-493, 1993

An editorial comment by William S. Simmons, Director, Smoking and Health, R.J. Reynolds Tobacco Company, addressing the recently-published Siegel article, was published in the *Washington Times* August 26, 1993. In his publication, Siegel had proposed that ETS exposures were higher in restaurants and bars than in other workplaces, and attributed some of the elevated lung cancer risk reported for food service workers to ETS exposures, calling for a ban on smoking.

In his commentary entitled, "Smoking Doesn't Pose a Threat to Restaurant Workers," Simmons states that Siegel's conclusion "is unsupported by the studies he cites," noting that the authors of those studies suggested that the reportedly elevated lung cancer risks for food service workers could be related to such factors as stress, diet, alcohol consumption, active smoking, air pollution, radon, asbestos, and other factors.

Simmons also suggests that Siegel's conclusions "violated the limits of" the studies referenced by Siegel. He writes: "Dr. Siegel misused and misrepresented their data to draw conclusions that far exceeded the conclusions that were reached, or were considered reachable, by those scientists."

## RESPIRATORY DISEASES AND CONDITIONS -- ADULTS

- [36] "Respiratory Symptoms in Young Adults Should Not Be Overlooked," M.S. Jaakkola, J.J.K. Jaakkola, P. Ernst, and M.R. Becklake, *American Review of Respiratory Disease* 147: 359-366, 1993 [See Appendix A]

This study investigates the relation between development of respiratory symptoms and the rate of change

of ventilatory lung function in young adults. The authors conclude that the development of symptoms "seems to indicate the evolution of ventilatory impairment." They report no effect of ETS exposure on the reported relationship.

## RESPIRATORY DISEASES AND CONDITIONS -- CHILDREN

- [37] "Infant Feeding, Wheezing, and Allergy: A Prospective Study," M.L. Burr, E.S. Limb, M.J. Maguire, L. Amarah, B.A. Eldridge, J.C.M. Layzell, and T.G. Merrett, *Archives of Disease in Childhood* 68: 724-728, 1993 [See Appendix A]

A cohort of approximately 450 children was followed in this Welsh study of possible risk factors for childhood wheeze. The authors report that "passive smoking" was statistically significantly associated with wheeze in the first year of life, but not at age seven; the relationship was reported for non-atopic children only. Reported risk factors for wheeze included having unemployed parents, and having never been breast fed.

## OTHER HEALTH ISSUES

- [38] "Predictors of Early School Failure Among Children in the United States," R.S. Byrd, K.J. Roghmann, and M. Weitzman, *American Journal of Diseases of Children* 147(4): 459, 1993 [See Appendix A]

In this abstract, the authors report that, of children repeating kindergarten or first grade, behavior problems, male gender, poverty, low birth weight, low maternal education, household smoking, residence with one or no biological parent, and recurrent otitis media were each statistically significantly associated with an increased risk of school failure.

- [39] "The Influence of Passive Smoking on the Fetus During Pregnancy [translation]," M. Pan, Z. Zhang, C. Wang, X. He, Z. Meng, G. Zhou, and H. Mao, *China Obstetrics and Gynecology Magazine* 27(6), 1992 [See Appendix A]

The authors of this study report that pregnant women exposed to ETS had increased risks of having small for

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gestational age babies, of premature labor, and of neonatal asphyxia. They also state that carbon monoxide from the burning of coal poses a risk of adverse neonatal outcomes.

than do children of nonsmokers. In this paper, they investigate whether smoking is associated with the levels of lead and cadmium in house dust; they report no such relationship.

## ETS EXPOSURE AND MONITORING

- [40] "Cigarette Smoke Exposure of School Children: Effect of Passive Smoking and Vitamin E Supplementation on Blood Antioxidant Status," A. Jendryczko, G. Szpyrka, J. Gruszczyński, and M. Kozowicz, *Neoplasma* 40(3): 199-203, 1993 [See Appendix A]

The authors of this paper claim that cigarette smoke contains large numbers of free radicals, chemical species believed to induce lipid peroxidation, a process which damages cell membranes. Both free radicals and some byproducts of lipid peroxidation have been hypothesized to have a role in carcinogenesis. The authors use markers of oxidative stress to determine the extent of lipid peroxidation, reporting significantly elevated levels in children of smoking parents compared to children of nonsmoking parents.

- [41] "Biological Markers of Intrauterine Exposure to Cocaine and Cigarette Smoking," G. Koren, J. Klein, R. Forman, K. Graham, and M.-K. Phan, *Developmental Pharmacology and Therapeutics* 18: 228-236, 1992 [See Appendix A]

This article focuses on the analysis of fetal hair for traces of cocaine and nicotine associated with the mother's intake of those substances. The authors report, however, that in a small sample of babies of nonsmoking women who reported ETS exposure, hair cotinine levels were higher than in babies of women who reported no ETS exposure. See issue 53 of this Report, August 6, 1993, for a recent letter to the editor by this research group.

- [42] "Cadmium and Lead Levels in House Dust from Smokers' and Non-Smokers' Homes Related to Nicotine Levels," S. Willers, H.O. Hein, A. Schutz, P. Suadicani, and F. Gyntelberg, *Indoor Environment* 2: 14-18, 1993 [See Appendix A]

The authors of this study have reported elsewhere that children of smokers have higher blood lead levels

## INDOOR AIR QUALITY

- [43] "Resolving IAQ Complaints with Ventilation System Operations and Maintenance (O&M)," J.A. Ventresca and J.S. Shrack, *Proceedings of Indoor Air '93* 6: 349-354, 1993 [See Appendix A]

These authors report that IAQ complaints can be resolved by properly operating and maintaining the ventilation system. Specifically, they list the following O&M problems that need to be considered: negative building pressure, outside air damper closing, inoperable chillers in the winter, improper tracking of fans, return air damper malfunction, and HVAC control problems.

## SMOKING POLICIES AND RELATED ISSUES

- [44] "Effects of a City Ordinance Regulating Smoking in Restaurants and Retail Stores," J. Sciacca and M. Eckrem, *Journal of Community Health* 18(3): 175-182, 1993 [See Appendix A]

The authors of this study report on a survey of businesses in Flagstaff, Arizona, following the implementation of an ordinance which prohibited smoking in retail businesses and allowed restaurants to choose to permit smoking, ban smoking, or permit smoking in designated areas. According to the survey, 82 percent of restaurants opted to allow smoking in at least some areas. Only three of 61 businesses reported a detrimental effect on business following implementation of the policy.

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## IN EUROPE & AROUND THE WORLD

### REGULATORY AND LEGISLATIVE MATTERS

#### AUSTRALIA

##### [45] Bundaberg City Council Increases Smoking Restrictions

The Bundaberg City Council has reportedly added mobile sheds to the list of buildings in the city in which smoking will be banned. The decision to ban smoking in these locations was apparently prompted by complaints by workmen and a fear of litigation by nonsmokers for injuries allegedly caused by ETS exposure. *See News-Mail*, August 25, 1993.

##### [46] Community Group Lauds City Council for Banning Smoking

According to a press report, the community consultative committee on tobacco, alcohol and other drugs has presented the Wagga City Council with a certificate in recognition of Council's decision to ban smoking in its public building. *See Daily Advertiser*, August 25, 1993.

##### [47] Designated Smoking Areas Nixed by Ulmarra Health Committee

Ulmarra Councillors reportedly suggested that a special smoking zone be designated in Ulmarra Council offices. A council health and safety committee apparently turned down the proposal out of concern the employees would file lawsuits over ETS exposure. *See Daily Examiner*, August 23, 1993.

#### AUSTRIA

##### [48] Tobacco Law Stalled by Objections of Economics Minister

According to a press report, the economics minister has expressed his opposition to the draft tobacco law which provides, among other matters, for the compulsory establishment of nonsmoking sections in restaurants. The draft was reportedly dropped from the agenda of a recent session of the Ministerrat following a meeting between the economics minister and health minister. *See Die Tabak Zeitung*, August 27, 1993.

#### CANADA

##### [49] Ottawa Council Votes on Smoking Regulations

As yet unspecified smoking restrictions reportedly will be imposed in Ottawa's outdoor stadiums beginning in 1994. However, on September 1, 1993, the Ottawa Council voted that the public should be consulted before deciding on specific measures, which could range from a complete smoking ban to a requirement for areas of smoke-free seating. *See* issue 54 of this Report, August 27, 1993.

Also on September 1, Ottawa's bylaw on smoking in public was amended to require bowling alleys, bingo halls and billiard halls to provide half of their space as smoke-free, although bingo halls are being given until January 1, 1996, to reach the 50 percent mark. The bylaw was also amended to include any indoor area with public access, regardless of whether payment is required to enter. The new smoking provisions reportedly will take effect at the next council meeting, set for September 15. The Council defeated a proposal that would have gradually required that bingo halls become smoke free by the year 2000. *See The Ottawa Citizen*, September 2, 1993.

#### ISRAEL

##### [50] Tennis Centers Declared "No-Smoking Zones"

In an action approved by the Health Ministry, the 11 Israel Tennis Centers were declared smoke free on September 2, 1993. The ministry cited the requirements of physical exertion as the reason for the smoking bans.

In other public facilities, such as cinemas, theaters, health clinics, hospitals and schools, smoking is currently restricted to limited areas. The Health Ministry has not been successful in getting an amendment to ban workplace smoking through the Knesset labor and social affairs committee. *See The Jerusalem Post*, September 2, 1993.

#### SWITZERLAND

##### [51] Labor Legislation for "Protection" of Nonsmokers

According to a press report, an amendment to current labor legislation will take effect on October 1, 1993. The amendment includes a provision for better

"protection" of nonsmokers on the job, and applies to the trades, the service sector as well as to industry. It stipulates that health protection and job safety must be considered at the planning phase of new facilities. See *Neue Zürcher Zeitung*, August 20, 1993.

#### THAILAND

##### [52] Health Ministry to Enforce Antismoking Laws

According to a press report, Thailand's public health ministry will be deploying some 450 "smoke busters" to enforce the nation's tough antismoking laws. People who smoke in public places will be fined up to 2000 Baht. See *Courier Mail*, September 6, 1993.

#### UNITED KINGDOM

##### [53] Workers Challenge Smoking Ban

According to a press report, six workers at the Newcastle town hall have challenged a smoking ban imposed in the building by council. They apparently claim that the ban is adding to workplace stress. See *Newcastle Journal*, August 27, 1993.

#### ETS-RELATED LITIGATION INVOLVING CIGARETTE MANUFACTURERS

##### AUSTRALIA

##### [54] *TIA v. Stephen Woodward* (Supreme Court, Equity Division, New South Wales) (filed April 15, 1993)

Trial in this action was held before Justice Bryson on September 6 and 7, 1993. The only witness to testify in the case was Stephen Woodward. On cross-examination, Woodward admitted that he had not read the EPA Risk Assessment on ETS or the full opinion in *AFCO* when he made allegedly misleading statements to the press. In addition, Woodward admitted that he was a professional advocate and was actively seeking to reduce the sale of cigarettes in Australia. Attempts to introduce evidence regarding allegedly misleading and deceptive statements by TIA concerning the *AFCO* judgment were rejected by the

court as was an attempt to introduce evidence regarding why Woodward believed the EPA had linked ETS with heart disease.

Woodward's attorney was unable to complete his summation before the close of court. The judge gave both parties the opportunity to submit written summations and responses before he reaches a decision in the case, but he did not indicate when he expected to rule on the matter.

TIA's claims against anti-tobacco activist Stephen Woodward include allegations that Woodward misrepresented the judgment of the full federal court in *AFCO v. TIA*, and made misleading statements when he said that the EPA Risk Assessment on ETS concluded that ETS exposure causes heart disease. The action is based upon the New South Wales Fair Trade Act and requires that the court find whether the representations were made in "trade or commerce" under that Act.

#### ETS-RELATED LITIGATION NOT INVOLVING CIGARETTE MANUFACTURERS

##### UNITED KINGDOM

##### [55] *Wright v. Ladbroke's* (Industrial Tribunal, Birmingham) (decided May 27, 1993)

According to a press report, Patricia Wright, who was dismissed from her job in a betting office for defying a smoking ban, has been awarded compensation in an out-of-court settlement with Ladbroke's, her employer. An industrial tribunal, which decided the case in May 1993, had determined that Wright's dismissal was procedurally unfair, but that the employer had the right to impose a smoking ban among its employees. A summary of the tribunal's decision appears in issue 49 of this Report, June 11, 1993. The case had been relisted for a hearing on the appropriate remedy. Although the settlement is confidential, it is reportedly believed that Wright received about GBP 500. See *Daily Telegraph*, September 7, 1993.

## OTHER DEVELOPMENTS

## AUSTRALIA

**[56] Health Authority Produces "Please Don't Smoke Near Me" Kits**

The Central Regional Health Authority, Health wise and Drug & Alcohol Services have reportedly used a \$3,000 state grant to produce antismoking kits dubbed "Please Don't Smoke Near Me." It is apparently being claimed that smokers are responsible for the deaths of 1,500 nonsmoking Australians each year and that death by ETS exposure is the third leading preventable cause of death after active smoking and drug abuse, causing 10 times as many deaths from heart disease as from lung cancer. *See Morning Bulletin*, September 1, 1993.

**[57] Queensland Watchhouse Smoking Ban Relaxed**

The police have reportedly decided to relax a smoking ban in Queensland watchhouses. Watchhouse keepers will now apparently be permitted to use their discretion in deciding whether long-term detainees who become aggressive due to lack of cigarettes may smoke. A Cairns cell visitor group has reportedly called for more concessions in the wake of the police decision on smoking. *See Cairns Post*, August 26, 1993.

**[58] Invention May Save Building Owner Litigation Fees**

Inventor Terry Faulkner is reportedly claiming that his latest invention, a "Passive Smoking Downlight," could save hotel and restaurant owners thousands of dollars in litigation fees. The device apparently extracts smoke from rooms. *See Tweed Daily News*, August 28, 1993.

**[59] New South Wales Sports Club to Restrict Smoking**

The Dunoon Sports Club in New South Wales has reportedly imposed restrictions on smoking, making it, what is believed to be, the first sports club in the region to do so. Smoking will apparently be permitted only in outdoor areas. According to the club president, concerns about litigation prompted the decision to restrict smoking. *See Northern Star*, August 28, 1993.

**[60] Tobacco Growers Concerned About Smoking Bans**

According to a press report, Queensland tobacco growers are pessimistic about the future due to the increasing number of bans on smoking imposed in public places and workplaces. The growers are also apparently concerned about the high taxes government is placing on the sale of cigarettes. *See Australian Financial Review*, August 31, 1993.

## BOSNIA AND HERZEGOVINA

**[61] Smoking Bans Not a Priority in Sarajevo**

In war-torn Bosnia, it has reportedly been said that enforcement of a restaurant smoking ban would evoke a violent response. In spite of the collapse of almost all industry in the country, a factory in Sarajevo is still producing cigarettes which are apparently being sold at exorbitant prices to people who say they are only able to tolerate the living conditions associated with the 17-month siege by smoking. *See The Kansas City Star*, September 5, 1993.

## CANADA

**[62] Vancouver Pretrial Centre Imposes Smoking Restrictions**

On September 1, 1993, the Vancouver Pretrial Centre, which houses prisoners awaiting trial, initiated a policy which only allows smoking in designated areas. Prisoners had previously been allowed to smoke anywhere in the jail, including their cells. Under the new policy, prisoners may only smoke in an outdoor exercise area and on outdoor patios adjacent to the cells. In an effort to encourage smoking cessation, prisoners are being offered free transdermal nicotine patches and additional vegetables, fruits and other supplements to their diets. The jail stopped selling tobacco in late August. Prison staff are prohibited from smoking in work areas, but can smoke in designated areas or outside.

The Vancouver Pretrial Centre is the first provincial jail to institute such smoking restrictions. According to a corrections spokesperson, the government will probably make a decision within three weeks on whether to impose a complete smoking ban in all

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provincial jails. See *The Vancouver Sun*, September 1, 2 and 3, 1993.

#### NETHERLANDS

[63] Council Urges Caution in Adopting Railway Smoking Ban

The personnel council of the Netherlands Railways has reportedly requested that railway management adopt a trial smoking ban before a general ban is implemented aboard local "stopping" trains in the summer of 1994. According to a press report, railway personnel are concerned that the ban will result in passenger aggression on the part of those who oppose the ban. See *Het Algemeen Dagblad*, August 20, 1993.

#### NEW ZEALAND

[64] Motel Lodge Imposes Smoking Ban and Claims Occupancy Level Up

The AA Motel Lodge has reportedly become the first motel in New Zealand to impose a complete ban on smoking. Unnamed sources are claiming that the hotel occupancy rate has increased by some 15 percent following implementation of the smoking ban. See *New Zealand Herald*, August 21, 1993.

#### UNITED KINGDOM

[65] ETS Conference Scheduled in London

The Europe Against Cancer Programme and the Cancer Education Co-ordinating Group are reportedly sponsoring a conference entitled "Passive Smoking. Have you got breathing space?" which will be held in London on October 11, 1993. Delegates will apparently be offered the opportunity to explore the issues surrounding ETS issues and to participate in the "Breathing Space Campaign." This campaign, to be launched in the United Kingdom on September 11, 1993, will reportedly provide the public with information about lobbying for smoke-free public places. See *Europe Against Cancer Programme*, 1993.

#### MEDIA COVERAGE

##### AUSTRALIA

- [66] "Public Policy More Effective Than Individual Interventions in Smoking Cessation," S. Chapman, *British Medical Journal*, August 28, 1993

According to this article by Australian antismoking activist Simon Chapman, measures such as workplace smoking bans will be more effective in controlling individual decisions about smoking than a doctor's advice to an individual smoker. The article, which involves a discussion of the physician's role in smoking cessation, suggests that lobbying for smoking bans would be more productive in this regard because a person's cultural, political and economic environment has more of an impact upon issues of choice than smoking control programs oriented to the individual.

##### SINGAPORE

- [67] "Primary Texts to Have Don't-Smoke Messages," *The Straits Times*, August 23, 1993

Responding to publicity concerning a youth smoking survey by the Singapore Armed Forces Medical Services and the National University of Singapore, the Health Ministry announced intensified efforts to discourage smoking initiation among primary school students. The new program will include anti-smoking messages in health textbooks. Current anti-smoking measures include requiring all schools to be smokefree and prohibiting staff from smoking in the presence of their students. This article also notes that there has been recent legislation banning teenagers under 18 from buying cigarettes and smoking in public. Earlier this year, the Health Ministry conducted a seminar for primary school principals on the legislation.

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## APPENDIX A

The numbers assigned to the following article summaries correspond with the numbers assigned to the synopses of the articles in the text of this Report.

### RESPIRATORY DISEASES AND CONDITIONS — ADULTS

- [36] "Respiratory Symptoms in Young Adults Should Not Be Overlooked," M.S. Jaakkola, J.J.K. Jaakkola, P. Ernst, and M.R. Becklake, *American Review of Respiratory Disease* 147: 359-366, 1993

"The purpose of this study was to examine the relation between development of respiratory symptoms and the rate of change in ventilatory lung function in young adults during a study period of 8 yr. The study population consisted of 391 subjects who were 15 to 40 yr of age at initial examination, when they underwent spirometry and an interviewer administered... questionnaire on respiratory health, and who were reexamined 8 yr later."

"The main objective of the present study was to examine the relation between development of respiratory symptoms during the study period and the rate of change in ventilatory lung function in young adults. A second objective was to assess whether the relation between symptoms and evolution of lung function is modified by other factors, including gender, atopy, smoking, and exposure to environmental tobacco smoke (ETS) during childhood."

"Exposure to ETS was classified according to the answer (yes or no) to the question, Did any member of your family living at home smoke cigarettes while you were growing up?"

"The proportion of subjects who were exposed to ETS at home during the period of growth was as large as 76% among men and 80% among women."

"Of 276 subjects who did not have wheezing with colds or apart from colds at baseline, about one-fourth (28%) developed this symptom during the study period. One-fifth (18%) of subject without dyspnea initially developed dyspnea during the study. Only 2% of 383 subjects without doctor-diagnosed asthma at

the time of the initial examination reported that asthma was present at the 8 yr examination. Of 356 subjects without cough initially, 8% developed this symptom, and 10% of 353 developed phlegm production. At baseline 370 subjects did not have chronic bronchitis...and 6% of these had it at the 8 yr examination. Initially 220 subjects were without respiratory symptoms, and 40% of these developed one or more of the respiratory symptoms during the study period."

"The appearance of any respiratory symptom or combination of symptoms during the study period showed a significant relationship with [rate of change in] FEV<sub>1</sub> of -11.1 ml/yr compared with subjects remaining asymptomatic."

"In general, the associations between the onset of symptoms and [rate of change in] FEV<sub>1</sub> were larger in never smokers and exsmokers compared with smokers."

"The appearance of symptoms and asthma had, as a rule, a greater impact on [rate of change in] FEV<sub>1</sub> in never smokers than in smokers."

"Gender and exposure to ETS during the period of growth did not modify significantly any of the associations between incident respiratory symptoms and [rate of change in] FEV<sub>1</sub>."

"The results of the present study underscore the importance of respiratory symptoms in young adulthood, since the development of wheezing and dyspnea seems to indicate the evolution of ventilatory impairment. Acquiring doctor-diagnosed asthma seems to be associated with a very strong negative impact on ventilatory function, but the relationship between appearance of hyperresponsiveness-related symptoms and deterioration of ventilatory function is not essentially different in subjects without asthma. This association seems to be stronger in never smokers than in smokers, indicating that personal tobacco smoking is not the only reason for evolution of respiratory symptoms and ventilatory impairment in young adults. From the public health and clinical point of view, this means that when respiratory symptoms appear in young adults, attention should be paid to potential environmental hazards in addition to personal smoking."

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## RESPIRATORY DISEASES AND CONDITIONS — CHILDREN

- [37] "Infant Feeding, Wheezing, and Allergy: A Prospective Study," M.L. Burr, E.S. Limb, M.J. Maguire, L. Amarah, B.A. Eldridge, J.C.M. Layzell, and T.G. Merrett, *Archives of Disease in Childhood* 68: 724-728, 1993

"The determinants of wheezing and allergy were investigated in 453 children with a family history of allergic disease. A randomised controlled trial examined the effects of withholding cows' milk protein during the first three months of life and replacing cows' milk with soya milk. The children were followed up to the age of 7 years."

"The withholding of cows' milk protein did not produce any decrease in the frequency of wheeze, asthma, eczema, or allergic rhinitis."

"In the present study, no associations were found between early exposure to mite antigen or cats and the development of atopy, wheezing, or a positive skin test at the age of 7 years."

"Employment status had a major effect on non-atopic wheeze; the important factor was whether the parents were employed or not, rather than their social class. The 'unemployed' group contained a high proportion of one parent families, and presumably the child's susceptibility to wheeze was a reflection of fundamental social factors."

"Passive smoking is a recognised cause of respiratory symptoms in early childhood. In this study it was a major independent risk factor for wheeze during the child's first year of life; by the age of 7 years the effect was no longer statistically significant when allowance was made for certain other variables, although it was still quite large. The relationship between wheeze and passive smoking was confined to the non-atopic children — that is, maternal and other passive smoking did not appear to increase the risk of atopy nor of symptoms in the atopics."

"During the first year of life, wheezing occurred twice as frequently in those who were never breast fed as in those who had received any breast milk, and this relationship could not be accounted for by other factors such as social class, maternal smoking, or overcrowding."

"Thus, these findings imply a reduction in wheezing due to infection rather than in wheezing due to allergy."

"It is...not wholly implausible to postulate that breast feeding in infancy protects children against respiratory infections for several years."

## OTHER HEALTH ISSUES

- [38] "Predictors of Early School Failure Among Children in the United States," R.S. Byrd, K.J. Roghmann, and M. Weitzman, *American Journal of Diseases of Children* 147(4): 459, 1993

"We report the results of a study conducted to investigate health and social factors that are associated with early school failure in a nationally representative sample of children in the United States."

"Nationally, 7% of children repeated kindergarten or first grade... [I]ncreased rates of behavior problems on a standardized behavior rating scale ranked as the leading predictor of school failure (OR=2.0, 95% CI=1.6 to 2.5). Other factors shown to be independently associated were: poverty (OR=1.6, CI=1.2 to 2.0), male gender (OR=1.6, CI=1.3 to 1.9), low birth weight (OR=1.6, CI=1.1 to 2.1), low maternal education (OR=1.4, CI=1.2 to 1.8), household smoking (OR=1.4, CI=1.1 to 1.7), children's residence with one or no biologic parent (OR=1.4, CI=1.2 to 1.7), and recurrent otitis media (OR=1.2, CI=1.0 to 1.5). Race and various chronic diseases, while significant in bivariate analysis, were not independently associated with early school failure in a model which controls for poverty, maternal education, and family structure."

"Thus, four common child health problems — low birth weight, behavior problems, recurrent otitis media, and passive exposure to household smoke — are among the major predictors of early school failure in our nation's children. These findings have significant implications for pediatric and public health preventive, screening, and therapeutic interventions."

- [39] "The Influence of Passive Smoking on the Fetus During Pregnancy [translation]," M. Pan, Z. Zhang, C. Wang, X. He, Z. Meng, G. Zhou, and H. Mao, *China Obstetrics and Gynecology Magazine* 27(6), 1992

"A study was made of 188 pregnant women subject to passive smoking to determine the hazard to the fetus."

"The study took into account age, occupation, passive smoking (Smoking by husband, family member living in same home, or co-worker working in same office), type of cooking fuel used in home, home and kitchen situations, time per day spent cooking in the kitchen, and blood pressure during pregnancy."

"[A] test was made using the rates of three indicators of influence on the fetus — SGA (birthweight lower than the tenth percentile of the standard birthweight for the same number of weeks), premature labor, and neonatal asphyxia (one-minute Apgar score  $\leq 7$ )."

"It was observed that the rates of SGA, premature labor, and neonatal asphyxia were significantly higher in the passively smoking group than in the control group."

"The above results showed that the rates of SGA, premature labor, and neonatal asphyxia are related to the two factors of husband smoking and hypertension. Just as is active smoking, passive smoking is a hazard to the fetus."

"The results of data analysis by this group showed that the risk of SGA for passively smoking pregnant women (husband smoking) was 1.6 times that for pregnant women whose husbands did not smoke."

"This study showed that the risk of neonatal asphyxia for passively smoking mothers was 3.25 times higher than that for women whose husbands did not smoke. Thus the perinatal mortality for children of passively smoking women was also higher."

"This study used the mother's blood COHb and the umbilical venous COHb as indicators to determine the seriousness of contact with the noxious gas carbon monoxide in passive smokers and burners of coal."

"Thus, the hazard to both mother and fetus of pregnant women burning coal and passively smoking is undeniable.... In severe cases, there is a deficiency in the oxygen supply to the tissues and organs, which causes a series of responses that are extremely damaging to both the mother and the fetus, but particularly to the fetus. There can be increased rates of SGA, premature labor, and neonatal asphyxia."

## ETS EXPOSURE AND MONITORING

- [40] "Cigarette Smoke Exposure of School Children: Effect of Passive Smoking and Vitamin E Supplementation on Blood Antioxidant Status," A. Jendryczko, G. Szpyrka, J. Gruszczynski, and M. Kozowicz, *Neoplasma* 40(3): 199-203, 1993

"Cigarette smoke contains vast amounts of free radicals, which can directly and indirectly initiate and propagate the process of lipid peroxidation. Thus, smokers encounter a sustained free-radical load, which facilitate the development of cancer. The risk of cancer would be further exacerbated by an inadequate dietary intake of antioxidants such as vitamin E."

"The aim of this study was to assess whether indices of free-radical-mediated peroxidation are increased in children of smoking parents as compared with children of non-smokers and whether children of smoking parents benefit from supplementation with the lipid-soluble free-radical scavenger, vitamin E. The effects of passive smoking on blood antioxidants and antioxidant-related enzymes were also assessed."

"Passive smoking causes changes in certain indices of antioxidant status. The enhanced susceptibility of erythrocytes of children of smoking parents to lipid peroxidation may reflect the lower activities [of certain enzymes]."

"[T]he susceptibility of erythrocytes to peroxidize in vitro was markedly decreased in supplemented children of smoking parents."

"Despite the relative increase in plasma vitamin E with age, conjugated dienes were also elevated, suggesting that peroxidation of endogenous fatty acids is more marked in older children. Similar changes in plasma lipid peroxides have been implicated in causing the initial lesion in lung and larynx, which may predispose development of cancer."

"Evidence is clearly mounting that tobacco smoke inhaled passively by nonsmoking children is potentially carcinogenic."

"The evidence we report lends further support to the observation that passive smoking may increase the risk of subsequent cancer, and it suggests that it may be particularly important to protect the children from this environmental hazard."

- [41] "Biological Markers of Intrauterine Exposure to Cocaine and Cigarette Smoking," G. Koren, J. Klein, R. Forman, K. Graham, and M.-K. Phan, *Developmental Pharmacology and Therapeutics* 18: 228-236, 1992

"We describe hair tests for assessment of fetal exposure to cocaine and cigarette smoking....In order to utilize hair measurements of cocaine as a biological marker of systemic exposure, we conducted both animal and human investigations on the dose response characteristics of this phenomenon....To date, no biological markers have been identified that can predict the extent of fetal exposure to the adverse effects of toxic constituents of cigarette smoke."

"Smoking and nonsmoking mothers were identified in two nurseries in Toronto. Detailed history of smoking habits was recorded....Hair samples were obtained by cutting 5-7 hair shafts near the skull using fine scissors."

"There were 11 pairs of nonsmoking mothers. Their mean hair concentrations of nicotine and cotinine were significantly lower than in smoking mothers. Similarly, neonatal hair concentrations of nicotine and cotinine were significantly lower in babies of nonsmokers when compared to infants of smokers."

"Of the 11 pairs of nonsmokers, 4 mothers were passively exposed to cigarette smoking in the household during pregnancy. Their concentrations of nicotine were not different from those not exposed. Conversely, cotinine concentrations in passive smoking mothers were significantly higher than in those not exposed to any smoke. Similar trends were observed in the babies of passive smokers having more cotinine than in nonexposed ones, with no differences in nicotine concentrations."

"During the last years there has been increasing awareness of the serious health risks inflicted by passive exposure to cigarette smoke. Our data suggest that, indeed, women and their unborn babies are accumulating nicotine and cotinine even when they avoid smoking. Although our sample size is too small to draw definite conclusions, of the four babies of nonsmoking women exposed to 'passive smoking', three had detectable levels of cotinine in their hair."

"In summary, we believe that the hair test is likely to develop into a critical tool for assessing the degree and time of fetal exposure to xenobiotics."

- [42] "Cadmium and Lead Levels in House Dust from Smokers' and Non-Smokers' Homes Related to Nicotine Levels," S. Willers, H.O. Hein, A. Schutz, P. Suadicani, and F. Gyntelberg, *Indoor Environment* 2: 14-18, 1993

"An additional source of metals may be tobacco, as it contains lead and cadmium. Accordingly, smokers have slightly higher mean B-Pb [blood levels of lead] and much (about 6-fold) higher blood cadmium levels (B-Cd) as compared to non-smokers. Further, we found higher B-Pb in children of smoking parents, as compared with the children of non-smokers. This finding has been confirmed in other studies. No similar effect of environmental tobacco smoke (ETS) exposure on B-Cd has been shown. One possible explanation for the effect of ETS on B-Pb in children could be that the level of lead is increased in homes of smokers, because of the lead in dust originating from tobacco smoke and/or ash."

"To investigate whether there is an association between smoking in the household and the amount of lead and cadmium in house dust, samples of floor dust were analysed from the homes of smokers and non-smokers."

"There was no significant influence of smoking habits on the metal content of house dust."

"The present study showed that house dust in certain homes may contain high concentrations of lead and cadmium. Neither the smoking habits nor the socio-economic status of the residents were found to be of importance for the metal levels in house dust."

"[I]n the present study, there were no differences in the metal content of house dust between smokers' and non-smokers' homes. Thus, there should be no variation in exposure to dust-born metals *originating* from tobacco between smokers' and nonsmokers' homes. Alternatively, since ETS, in some studies, has been associated with the development of airway disease, the association between parental smoking and B-Pb may be due to a smoke-induced damage of the airway mucosa of the children, which, in turn, could have lead [sic] to an increased retention of metals in the lung."

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## INDOOR AIR QUALITY

- [43] "Resolving IAQ Complaints with Ventilation System Operations and Maintenance (O&M)," J.A. Ventresca and J.S. Shrack, *Proceedings of Indoor Air '93* 6: 349-354, 1993

"In a case study high-rise office building, the indoor air quality (IAQ) and energy impacts of minimum ( $V_{min}$ ) and maximum ( $V_{max}$ ) ventilation were measured. At  $V_{min}$  and  $V_{max}$ , the perceived indoor air quality and IAQ in terms of physical and chemical parameters was measured. These results have been reported. This paper focuses upon a significant practical observation of this research: that IAQ complaints can be resolved with proper ventilation system operation and maintenance (O&M). Six common ventilation system O&M problems are identified and their solutions discussed.

"Some causes of inadequate ventilation, such as a lack of outside air intakes, have been well documented. However, for most commercial office buildings in the U.S.A., the *ventilation system is a sub-system of the air conditioning system*. Modern air-conditioning systems are often extremely complex, utilizing combinations of pneumatic controls, electric controls, electronic sensors, and computerized facilities management and energy management systems. Therefore, ventilation system O&M problems may be difficult to identify and difficult to remedy."

"The perceived IAQ was assessed...by questioning the occupants. Since this was not a 'sick-building', we were amazed by the vigorous complaints...The complaints were of headache, fatigue, burning eyes; and that there was stuffiness, inadequate ventilation, lack of air movement, and dryness."

"The extensive IAQ measurements revealed outside air was about 35 L/s (71 CFM) per person, as estimated from afternoon CO<sub>2</sub> measurements, and both the indoor and ambient air pollutant levels were very low. The IAQ complaints were resolved through a comprehensive operations and maintenance (O&M) assessment, and subsequent ventilation system O&M improvements."

"To solve complex IAQ problems with multiple causes, it is necessary to determine a priority order of solution activities. Proper ventilation system econo-

mizer and temperature controls operation and maintenance should be a first priority, since it always results in immediate improvement, and is generally cost effective. Even if it does not completely solve an IAQ problem, it will improve the situation, and help for assessing further IAQ mitigation techniques."

## SMOKING POLICIES AND RELATED ISSUES

- [44] "Effects of a City Ordinance Regulating Smoking in Restaurants and Retail Stores," J. Sciacca, M. Eckrem, *Journal of Community Health* 18(3): 175-182, 1993

"In July of 1989, the City of Flagstaff enacted an ordinance which prohibited smoking in public areas of retail stores and required restaurants to post signs reflecting one of the three following policies: (a) no smoking permitted in any area, (b) smoking permitted only in designated areas, or (c) smoking permitted in all areas. The purpose of this study was to assess the effects of this ordinance on restaurants and on retail stores where the public shops for goods approximately one year after enactment. We conducted a two-part study to obtain an objective, non-biased assessment of the effects of the current Flagstaff smoking ordinance on local businesses."

"Given the choice of which smoking policy to adopt, only 18 percent of all the city's restaurants prohibited smoking."

"It is interesting to note that given a choice, 82 percent of the restaurants chose to allow smoking in at least some public areas. If former Surgeon General Koop is correct that 'simple separation of smokers and nonsmokers within the same air space may reduce, but does not eliminate, exposure of nonsmokers to environmental tobacco smoke,' then an ordinance which requires business managers to post but allows them to choose their smoking policies is not likely to prevent exposure of non-smokers to second-hand smoke."

"The vast majority of respondents, including those from restaurants which banned smoking in all areas, believed that the smoking ordinance had no effect on their business. Only three respondents felt that the ordinance had a negative effect on their business."

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When asked to explain that effect, only one response (1.6% of the sample) suggested a loss of business as a result of the ordinance. This loss of business was further explained as being only temporary."

"The finding that retail stores' average gross sales increased dramatically, along with reports that the overall economy posted a decline in many communities close to Flagstaff (communities which did not have smoking ordinances) yet business and tourism in Flagstaff 'boomed' after the smoking ordinance went into effect, provides further support for the belief that prohibiting smoking in these stores did not have an adverse effect on business."

"In summary, the accumulating evidence associating passive smoking with health risks indicates a need for stronger efforts to protect non-smokers from exposure to tobacco smoke. A highly promising way of reducing an individual's exposure to second-hand smoke is through the enactment of ordinances which restrict smoking in public areas."

"The study makes the following points: 1) businesses report adopting smoking policies when required to do so by law, 2) restaurants will not necessarily prohibit smoking if an ordinance does not require it, 3) business representatives do not perceive a loss of business after enactment of a no-smoking ordinance, and 4) gross sales data support business representatives' perceptions that an ordinance which prohibits smoking in stores does not cause a loss of business."

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